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be learned from the contents of such divisions as from the definition, since in early stages of the science definitions are always defective. This rule will be definitive of the action of the law of priority which is now often neglected in the case of the higher divisions.

—— Good illustrations are an important part of scientific literature, and in some of the departments essential. This is especially true of embryological and histological work. The difficulty encountered in the United States is the comparative expensiveness of the ordinary processes. For several years American naturalists and institutions have been seeking for cheaper methods. The Smithsonian Institution and the National Museum have been especially active in this work, doubtless with the excellent object of securing the greatest good to the greatest number. There are many phototypic processes, and many of them have been tried. We are sorry to have to confess that the results have not been as successful as has been hoped. These processes do well enough for fugitive literature, but for permanent scientific work they are rarely good. In the case of line drawings the metal appears to be too soft, and breaks more or less during the process of manufacture. The strong shades of direct photography will forever, we fear, prevent their displaying surfaces clearly, except in the medium lights. The alternative seems to be to endeavor to secure the best illustrations at cheaper rates than are now paid. If we do not do so, there are strong symptoms that the best American work will seek European channels of publication.

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RECENT LITERATURE.

Biogen, by Dr. Coues.[1]—The present 12mo volume consists of a lecture delivered before the Philosophical Society of Washington, with introduction, preface and a liberal appendix. In the Preface we find a narrative account of the reading of the paper, and the criticisms, with elicited comments thereon. The Introduction is an extract from the official record of the meeting of the society on the same occasion. The first is written in Dr. Coues's graphic and entertaining style. The lecture itself is agreeable reading. As to the philosophy of the lecture, it may be summarized thus: As a biologist and familiar with animals, Dr. Coues perceives more in life than unintelligent forces, and he insists on its essential diversity from them. To sustain this position he cites many of the arguments usually adduced on this side of the question, some of which are very pertinent, but none of which are conclusive. However, towards the end of his remarks he takes the real and impregnable position of the vitalists, in the phenomena of consciousness and mind. Had Dr. Coues been contented to let his case rest here, he could not have been answered. But he goes further, and discusses that difficult problem, the relation subsisting between mind and matter. He here commits the usual error, the confusing of *attribute* with *substance*. He talks about "mind-stuff" and "soul-stuff" and denies it the qualities of matter. His immaterial matter he calls Biogen. "Biogen" he says (p. 55), "itself of course is alive, it *is* life; and biogen may be defined as spirit in combination with the minimum of matter necessary to its manifestation." The best way to exhibit the fallacies involved in this sentence, is by a paraphrase viz: Heat of course is in motion, it is motion; and heat may be defined as motion in combination with the minimum of matter necessary to its manifestation. The appendix is chiefly devoted to an exposition of this doctrine.

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[1] Biogen. Speculation on the origin and nature of Life. By Professor Elliott Coues. Boston: Estes & Lauriat, 1884.

Professor Coues's arguments for the distinctive importance of "mind in nature" are excellent; and his reasons for believing that the chemical constitution of protoplasm is not all there is of life, are weighty. It is when he tries to wed mind and matter that he falls into the difficulties that have floored many others before him, on both the materialistic and idealistic sides of the question.

BARROIS' PALÆOZOIC FORMATIONS OF ASTURIAS AND OF GALICIA.[1]—Asturias and Galicia, we are told by our author, form for the naturalist one région, bounded to the south by the Cantabrian chain, some of the summits of which rise above 2500 meters. From these mountains to the ocean extend series upon series of ridges, separated by profound transverse valleys, and well forested. The steep slopes render the heights difficult of access in the south, and in the center the vegetation masks the strongly inclined coal beds. These Asturian mountains are rich in iron, zinc, mercury, manganese, cobalt, and coal, and on account of these riches more than sixty geologists, commencing with P. Gaspar de Ibarra in 1644, have written upon the province of Oviedo.

After an enumeration of these memoirs M. Barrois attacks the lithology of the sedimentary rocks, of which Asturias is almost entirely composed, the eastern part consisting of limestone, the western of schists and quartzites which lie directly upon the archæan crystalline schists of Galicia. The plutonic rocks consist of granites, quartziferous porphyry, diorites, diabase, and recent quartziferous kersantites.

The fossiliferous horizons of the region are almost exclusively calcareous, and it is thus easy to draw a parallel between the Devonian and Carboniferous faunæ. No foraminifera have been noted in the Devonian limestones; madrepores, and especially

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[1] Recherches sur les Terrains Anciens des Asturies et de la Galicie, par Chas. Barrois, Lille, 1882. Ouvrage accompagné d'un Atlas de 20 planches.